IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 10/071,453
Filing Date ..... February 8, 2002
Inventor ..... Luan C. Tran
Assignee ..... Micron Technology, Inc.
Group Art Unit 2813
Examiner ..... L.M. Schillinger
Attorney's Docket No. MI22-1921
Title: A Plurality of Transistors Having Different Active Area Widths and Different Threshold Voltages Defined by STI

DECLARATION OF LUAN C. TRAN UNDER 37 C.F.R. §1.131

I, Luan C. Tran, hereby swear and state that:

1. I am the inventor of the subject matter of the above-referenced application, as evidenced by the invention disclosure attached hereto as Exhibit "A".

2. Prior to September 28, 1998, I conceived the subject matter of the above-referenced invention while working in my laboratory in Boise, Idaho at my place of employment Micron Technology, Inc., as evidenced by the accompanying invention disclosure (Exhibit A).

3. Prior to September 28, 1998, I reduced the subject matter of the above-referenced application to practice in my laboratory in Boise, Idaho, at my place of employment Micron Technology, Inc., as evidenced by the accompanying invention disclosure (Exhibit A).

4. The pertinent dates deleted from Exhibit "A" are prior to September 28, 1998.

5. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and, further, that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATED: Dec 8th, 2004 By: Luan C. Tran
LUAN C. TRAN
Inventor

EXHIBIT A

Micron Confidential and Proprietary Information

.18mm

INVENTION DISCLOSURE

1. **INVENTOR(S):**

   Luan C Tran

2. **DESCRIPTION:**

   - **Title:**

     Low Vt Transistor Using STI Reverse Narrow Width Effects

   - **Brief Description:**

     Using Reverse Narrow Width with STI process to achieve Lower Vt without using an additional mask.
     The current drive can be achieved using multiple narrow width devices in parrallel.
     This invention is useful for low Vtn precharge circuit or output driver where Low Vt is important to obtain higher signal level, due to Vt drop.

3. **CONCEPTION & DOCUMENTATION OF INVENTION:**

   - **Date when first conceived:**

     [redacted]

   - **To whom was the idea first described:**

     M. McQueen

   - **On what date:**

     [redacted]

   - **Date of the first tangible record:**

     [redacted]

   - **Type and location:**

     Param Data from X59 lot.

4. **INFORMATION RELATED TO INVENTION:**

   - **Related invention disclosures:**

N/A

- **Closest technology:**

  STI Isolation

- **Advantages of this invention over previous technology:**

  No mask is needed to form Low Vt devices, important for low voltage applica

5. **IMPORTANT DATES:**

- **If the invention has been disclosed outside the company, please specify to whom it has been disclosed, when, and in what form:**

  N/A

- **If any articles describing your invention have been published, please specify the author(s), title of article, publication and date:**

  N/A

- **If any engineering samples have been given out, please specify to whom and on what date they were given:**

  Param Results

6. **DISPOSITION OF THE INVENTION:**

- **When will (or did) Micron begin use of the invention experimentally:**

  [redacted], with X59 data.

- **When will (or did) Micron begin production of this invention:**

  [redacted] and later.

7. **MISCELLANEOUS INFORMATION:**

- **ARPA project:**

- **Was the invention developed during a joint development agreement or other contract with an outside company:**

  No

- **List developmental work outside of the company, including Government proposal or contract:**

  No

8. **INVENTORS:**

- ---

Name : Luan C Tran
Home Address : 1125 W. Sandy Ct
City : Meridian **State** : ID **Zipcode** : 83642
Citizenship : US

Company : Micron Technology, Inc.
Work Phone # : 368-4708 **Mail Stop** : 840
Dept Name : Process R&D **Dept #** : 850G
Supervisor : Mark Durcan

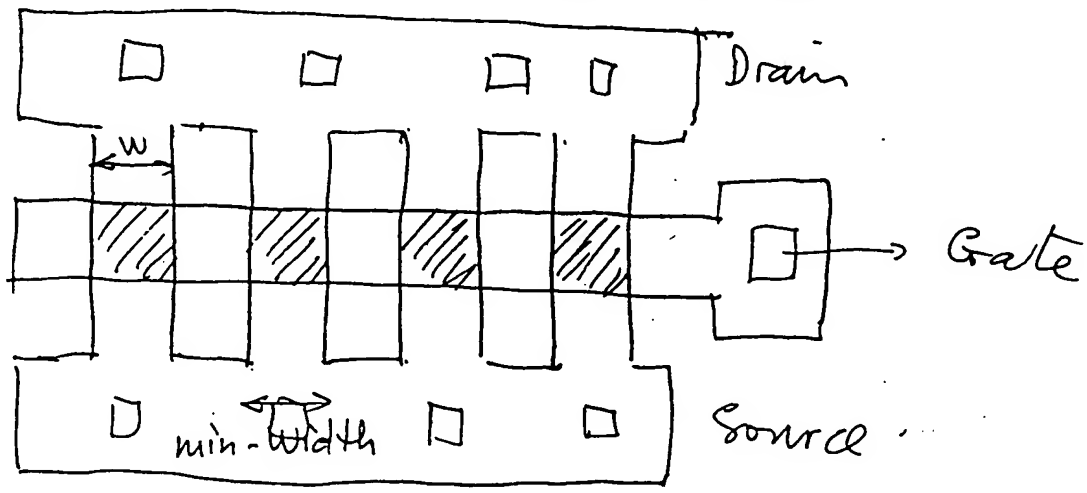
Signature : _____ **Date** : [redacted]

9. **WITNESS:**

If there is only one (1) inventor, a witness should sign and date this disclosure. A witness in this case is a non-inventor who understands the nature of the invention.

_____ [redacted]
(Signature of Witness) (Date)

Project Number 0.18 · Subject Reverse · W · V_T. · Notebook #100521 Date



Multiple V_T's can be created using this technique - For example: (param data from lot 618)

W (um)	V_{tn} (volt)
0.20	.572
0.26	.633.
0.40	.646
0.60	.692
> 2.00	.703

wide

Please do not write in the margin

Author's Signature: _____ Date: [redacted]

Witness' Signature: _____ Date: [redacted]
(Read and Understood)

Project Number 0.18 Subject Using Narrow width low V_T Notebook #100521 Date [redacted]

In Shallow Trench Isolation, it is known that device with narrow width has lower threshold voltage (V_t). [This is in contrast with the conventional LOCOS isolation where V_t increases with decreasing W].

This effect in shallow trench isolation is referred to as reverse narrow width effect.

In low voltage design, it is desirable to have low V_T for applications such as precharge circuits, or boosted gate of a low V_t device does not have to go as high -

Propose in this disclosure is a method to form low V_T device without using an additional photo mask.

Please do not write in the margin

Author's Signature: [signature] Date: [redacted]

Witness' Signature: [signature] Date: [redacted]
(Read and Understood)